# 2. Description of Existing and Historical Conditions

The *Truckee River Corridor Access Plan* is grounded in a strong understanding of the physical, biological, cultural, and socioeconomic characteristics of the Truckee River, as well as the existing planning context. This section summarizes relevant existing and past conditions of the corridor.

## 2.1 PHYSICAL CONDITIONS

### HYDROLOGY AND HYDRAULICS

The Truckee River originates high in the Sierra Nevada above Lake Tahoe, drains initially into Lake Tahoe, flows out of Lake Tahoe through the plan area, and terminates in Pyramid Lake, Nevada. Unlike most rivers that join other rivers and empty into the ocean, the Truckee River watershed is a terminal (i.e., closed) system. In addition to releases from Lake Tahoe, a number of tributaries including Bear Creek, Squaw Creek, Sliver Creek, Deer Creek, Pole Creek, Deep Creek, Rocky Wash, Brush Creek, and Cabin Creek feed the Truckee River and affect flows in the plan area.

The natural hydrology of the Truckee River is dominated by spring-snowmelt-runoff peaks of low to moderate magnitude that typically occur from April to July as the snowpack in the Sierra Nevada melts (U.S. Department of the Interior and State of California 2004). Intense rain and rain-on-snow events can also produce occasional high-magnitude, short-duration peaks at various times throughout the year. Truckee River runoff is normally highest during April, May, and June and lowest during August, September, and October (U.S. Fish and Wildlife Service 2003). It is reported that the Tahoe City–Squaw Creek reach is a gaining stream (i.e., adding source water) by virtue of spring flow (McKenna 1990).

Flows in the Truckee River have differed dramatically over time, including both extreme lows and highs. The average volume between 1905 and 1995 was 161,450 acre-feet. The highest-volume year on record was 1983 when 832,570 acre-feet were released into the Middle Truckee. The volume dropped to 110 acre-feet in 1994; the lowest-volume year on record. (Truckee River Watershed Council 2004).

### GEOMORPHOLOGY

The present Truckee River was formed concordantly with the uplift of the Sierra Nevada during the Quarternary period (i.e., past 5 million years). The upstream boundary of the Truckee River is Lake Tahoe, which lies in a deep "graben" basin formed by subsidence along faults separating the Carson Range to the east and the Sierra Nevada crest to the west. Granitic rocks underlie most of the Tahoe Basin, but younger volcanic rocks top the surrounding peaks and line the canyon through which the Truckee River flows out of the Tahoe Basin from Tahoe City.

The river flows within a narrow canyon between Tahoe City and the confluence with Squaw Creek, 7 miles north; streamflows are well contained between the highway road fill and hill slopes on the opposite bank. Within the section from Tahoe City to Squaw Creek, the river changes abruptly from a low-gradient, marshy channel with long gentle runs to a steep cascading whitewater river just above its confluence with Bear Creek (River Ranch). Below Squaw Creek, the canyon broadens slightly to a narrow valley with small floodplains and alluvial terraces that are elevated above the floodplains. As it moves downstream the river gradually flattens, but cascading shallow whitewater riffles are common.

At Granite Flat Campground, the channel gradient decreases and the floodplain widens to more than 120 feet. The channel morphology consists of pools and riffles. The floodplain is more susceptible to flooding during larger rain-flood events that occur approximately once every 10 years on average. The channel appears to have remained in its present position for some time.

A unique feature of the Truckee River is its natural separation from its upper watershed via Lake Tahoe. With the exception of flow releases from the lake, the river is essentially disconnected from specific upstream watershed-related processes such as source sediment supply, transport, and deposition. These process are relatively limited until the river is joined by the first major tributaries - Bear Creek and Squaw Creek.

### TRUCKEE RIVER FLOWS

The first facility to affect Truckee River flows in the study area was the timber crib dam that was constructed at the mouth of Lake Tahoe. This dam, which was constructed in 1870, was used to regulate flows of the Truckee for lumbering, mining, and power production. In the early 1900s this dam was rebuilt as a concrete structure; it is now called the Lake Tahoe Dam. Water was exported from the Truckee Basin for use in the Comstock mines. The river was also used to float logs down to lumber mills and to generate power for those mills. Dominant water uses later shifted toward agricultural and urban uses. Present uses of Truckee River water include agriculture, municipal, power production, recreation, and fish and wildlife uses (California Department of Water Resources 1991).

Timber crib dam, (early 1900's) — *Special Collections Department, University of Nevada, Reno Library*

The flow of the Truckee River currently and historically has been regulated by decrees, agreements, and operating requirements. The most pertinent requirements to current operations are the 1908 Floriston rates, the 1915 Truckee River General Electric Decree, the 1935 Truckee River Agreement, and the 1944 Orr Ditch Decree (Horton 1997, cited in Truckee River Watershed Council 2004).

The Floriston rates are established flow rates for the Truckee River that were negotiated as part of Truckee River General Electric Company's purchase agreement of the Lake Tahoe Dam. The agreement states that the flow rates at the state line must be maintained between 300 and 500 cubic feet per second (cfs) for hydropower generation.

The Truckee River General Electric Decree, which was entered into by the U.S. Bureau of Reclamation (Reclamation) and the Truckee River General Electric Company (predecessor to Sierra Pacific Power Company), granted Reclamation an easement to operate Lake Tahoe Dam and to use surrounding property owned by the power company. It also required Reclamation to operate the dam to maintain the Floriston rates.

Truckee River near Tahoe City, 2005

The Truckee River Agreement confirmed the Floriston rates; provided for releases of water from Lake Tahoe to prevent high-water damage along the shoreline; defined the interrelationship among "privately owned stored water," natural flow, and diverted water; and established the conditions under which Lake Tahoe could be pumped to serve agricultural needs of the Newlands Project.

The Orr Ditch Decree established individual water rights—amounts, place and type of use, and priority—and provided a framework for operating the river to meet those rights (California Department of Water Resources 1991).

Consumptive use of all surface waters and some groundwater of the Truckee River watershed is currently regulated by an interstate compact that has been approved by Congress as Public Law 101-618 (Pyramid Lake/Truckee-Carson Water Rights Settlement), and flows are managed by a federal watermaster under a court decree. Revisions in operating criteria for the river/reservoir system are currently being proposed. The draft environmental impact statement/environmental impact report for the *Truckee River Operating Agreement* (TROA) has identified instream flow for fisheries and water quality of the Truckee River as the key concerns for flow management. Regulated flows from Donner, Martis, and Prosser Creeks, the Little Truckee River (Stampede/Boca Reservoirs), and the dam at Lake Tahoe all influence base flows and the water quality of the main stem of the Truckee River (U.S. Department of the Interior and State of California 2004).

## CLIMATE

Climate along the Truckee River is characterized by mild summers and cold winters. The average annual temperature (recorded at the Truckee Ranger Station) from 1948 to 2005 was 43.4 degrees Fahrenheit (°F). Highs averaged 78.6°F during summer and 41.0°F during winter months (Desert Research Institute 2005).

Other climatic characteristics along the Truckee River are prevailing westerly winds, large temperature fluctuations, and infrequent but severe storms (Garcia and Carman 1986, cited in Desert Research Institute 2001). Precipitation measured at the Truckee Ranger Station averaged 31.43 inches (79.8 centimeters [cm]) annually, ranging from 16.04 inches to 54.62 inches (40.7–138.7 cm) for the period of record. Precipitation occurs predominantly as snowfall during winter months, generally increasing with elevation. Snowpacks in the Sierra Nevada have been observed year-round, and snowfall has occurred as late as July. Snowfall averages 205.1 inches (521 cm), but has been recorded as high as 401.4 inches (1,019.5 cm) at the Ranger Station (Desert Research Institute 2001, 2005).

## GEOLOGY

The crest of the Sierra Nevada forms the western boundary of the Truckee River watershed. A significant portion of the watershed is above 6,000 feet. Elevations of the Middle Truckee River range from 6,200 feet at Tahoe City to approximately 5,840 feet at the Placer County line. Tributary streams to the Truckee River are characterized by steep gradients in narrow, steep-walled canyons, except where the region was glaciated; in these areas, stream channels are broad and flat (Convay et al. 1996, cited in Desert Research Institute 2001).

## LANDFORMS AND SOILS

Fluvial terraces are common along the larger tributary watersheds and along the length of the Truckee River. They are typically coarse-grained alluvium that may be relatively stable depending on their landscape position relative to the Truckee River or incised streams that may cross the terraces. Older terraces have well-developed soils and may be sensitive to surface disturbance along edges of the terraces where relief is greatest (Desert Research Institute 2001).

Soils found within the plan area have been mapped and classified by the Soil Conservation Service (1974, 1994) of the U.S. Department of Agriculture. The soils in the Truckee River Basin include nearly level soils of valley floors to very steep soils of high-elevation mountainsides. The soils are generally excessively drained to moderately well drained. Soils at elevations ranging from approximately 4,800 to 6,500 feet (1,463–1981 meters) are formed primarily from weathered volcanic, rhyolitic and granitic rock, and alluvial deposits (Soil Conservation Service 1994, cited in Desert Research Institute 2001).

Principal soil orders found in the region are Alfisols and Inceptisols (Soil Survey Staff 1999, cited in Desert Research Institute 2001). Common suborders are Umbrepts and Xeralfs. Many of the soils are of great groups indicating aridic, ultic, and xeric climatic regimes. Some of the soil series and types reflect minimal soil development (entic soils).

Aridic soils are dry, alkaline mineral soils containing small amounts of organic materials and light-colored surface layers formed mostly in semiarid to arid environments. Ultic soils in the Truckee River Basin region have developed primarily under forest vegetation. These are weakly developed soils typically formed from alluvial material and occur with intermixed gravel and boulders (Convay et al. 1996, cited in Desert Research Institute 2001).

## WATER QUALITY

Water quality of the Truckee River is heavily influenced by water quality in Lake Tahoe and the immediate watershed and has been affected by a variety of sources.

### PRIMARY POINT AND NONPOINT SOURCE IMPACTS

Point and nonpoint sources of pollutants affect the Truckee River system. Nonpoint sources in the plan area are primarily sediment runoff from development, erosion of the surrounding watershed (including that caused by recreational activities and development), and urban stormwater runoff (Lebo et al. 1994). A major point source downstream of the plan area is treated wastewater effluent.

The Truckee River is on the federal Clean Water Act (CWA) Section 303(d) list for sediment. Several tributaries in the study area (including Squaw Creek and Bear Creek) are also on the Section 303(d) list for sediment.  Due to this listing, the Truckee River and Squaw Creek are among the Lahontan Regional Water Quality Control Board's (RWQCB's) highest priority water bodies for the development of Total Maximum Daily Loads (TMDLs).

In September 2002, the Truckee River Watershed Council, the Lahontan RWQCB, and the Center for Collaborative Policy convened an open and collaborative effort to develop a sediment-control plan for the Truckee River. Currently, this project is awaiting the results of a Lahontan RWQCB bioassessment study that is evaluating the conditions of aquatic life and sediment in the Truckee River between Lake Tahoe and the California-Nevada border. (See "Aquatic Ecosystem Monitoring and Bioassessment" on page 12 for additional information on bioassessment activities in the Truckee River.) The implementation plans of these two TMDLs may provide opportunities for coordinating recommended actions provided in this study plan.

## EROSION AND SEDIMENTATION

Portions of the watershed are highly erosive and contribute to turbidity and sedimentation of the Truckee River in the plan area. More than half of the Truckee River watershed has "moderate" to "very high" erosion potential based on slope. More than 23% of the watershed is in the "high to very high" category, which is defined as slope greater than 15% (California Watershed Assessment 1997, cited in Truckee River Watershed Council 2002). Turbidity increases after intense storms. Storm events have increased suspended sediment to the extent that downstream Nevada water purveyors have been unable to filter municipal supplies, and water rationing has been necessary. Concern about erosion in the larger watershed has increased as a result of extensive damage by several catastrophic forest fires in 1994.

The tributary subbasins of the plan area with the highest annual suspended sediment load include the Bear and Squaw Creek watersheds. These tributary watersheds are believed to show high rates of suspended sediment load because of rapid urbanization and ski area development (i.e., Alpine Meadows and Squaw Valley) (U.S. Department of the Interior and State of California 2004). Other land uses that may contribute to erosion and sedimentation in the plan area are access points, roads, and trails associated with transportation and recreation as well as and dispersed forest recreation (Lahontan Regional Water Quality Control Board 2002). Controlling sedimentation may provide opportunities to coordinate recommended actions from this study plan.

The Sierra Nevada Crest provides the western boundary of the Truckee River corridor, 2000

Snowshoe Hare — *© 2005 Jupiterimages Corporation*

American Marten — *© 2005 Jupiterimages Corporation*

## 2.2 BIOLOGICAL CONDITIONS

### VEGETATION AND WILDLIFE HABITATS

Plant community types that occur within the Truckee River corridor include montane riparian scrub, montane black cottonwood forest, montane wet meadow, montane freshwater marsh, lodgepole pine forest, Jeffrey pine-white fir forest, and Great Basin sagebrush scrub. Lodgepole pine forest, Jeffrey pine-white fir forest, and Great Basin sagebrush scrub are considered common vegetation communities. The riparian, meadow, and freshwater marsh communities are considered sensitive by the California Department of Fish and Game (DFG) and are tracked in the California Natural Diversity Database (CNDDB). In addition, these are wetland communities that may be subject to U.S. Army Corps of Engineers (USACE) jurisdiction under the CWA. Collectively they provide important ecosystem functions including groundwater recharge, moderation of peak flows, forage production for wildlife, and habitat functions for many vertebrate and invertebrate species. These communities also provide social values associated with cultural resources and recreation.

Riparian habitat along the Truckee River corridor is generally very narrow and patchy. The montane riparian scrub community is composed of montane wetland shrubs such as mountain alder (*Alnus incana ssp. tenuifolia*), Lemmon's willow (*Salix lemmonii*), and shining willow (*Salix lucida ssp. lasiandra*). Other riparian species include quaking aspen (*Populus tremuloides*), creek dogwood (*Cornus sericea*), and thimbleberry (*Rubus parviflorus*) with an understory of sedges and grasses. Riparian vegetation along the Truckee River corridor is dominated by mountain alder in the first several miles downstream of Lake Tahoe, but transitions to black cottonwood (*Populus balsamifera*) dominated forest downstream of Squaw Creek.

Riparian vegetation provides habitat for aquatic and terrestrial organisms such as aquatic insects, insectivorous birds, aquatic reptiles, amphibians, and mammals. Riparian habitats are among the most productive and species-rich areas in the Sierra Nevada bioregion, and support a high proportion of neotropical migrant landbird species (i.e., birds that breed in North America and winter in the neotropics). These areas function as breeding habitat, as well as important stopover areas during spring and fall migration. However, much of the riparian vegetation in the plan area is narrow and sparse, limiting its present habitat value in most locations.

Wildlife species associated with montane riparian habitats are generally similar to those described below for conifer forest. Additionally, MacGillivray's warbler (*Oporornis tolmiei)*, Wilson's warbler (*Wilsonia pusilla*), yellow warbler (*Dendroica petechia brewster*), western wood-pewee (*Contopus sordidulus*), house wren (*Troglodytes aedon*), warbling vireo (*Vireo gilvus*), song sparrow (*Melospiza melodia*), western toad (*Bufo boreas*), Pacific chorus frog (*Pseudacris regilla*), and raccoon are associated with montane riparian habitats.

Channel margins of the Truckee River include large patches of sedge-dominated, seasonally flooded, montane freshwater marsh habitat. These areas are found along the shallow, low-velocity segment of the river from the SR 89 bridge in Tahoe City to River Ranch. Common plant species include slender-beak sedge (*Carex athrostachya*), water sedge (*Carex aquatilis*), and beaked sedge (*Carex utriculata*) (U.S. Department of the Interior and State of California 2004). These riverine wetlands provide habitat for aquatic insects, amphibians, and waterfowl.

Upland habitats within the Truckee River corridor are characterized by coniferous forest communities. High floodplain terraces are dominated by lodgepole pine (*Pinus contorta* ssp. *murrayanna*) forest while Jeffrey pine (*Pinus jeffreyi*) and white fir (*Abies concolor*) become dominant further upland. Several rodent species, including deer mouse (*Peromyscus maniculatus*), golden-mantled ground squirrel (*Spermophilus lateralis*), and chipmunk (*Tamias* spp.), live on the forest floor in conifer forest. Western gray squirrel (*Sciurus griseus*) and Douglas' squirrel (*Tamiasciurus douglasii*) occur on the forest floor and in the forest canopy. Resident and neotropical migrant Passerine birds such as yellow-rumped warbler (*Dendroica coronata*), dark-eyed junco (*Junco hyemalis*), Steller's jay (*Cyanocitta stelleri*), Clark's nutcracker (*Nucifraga columbiana*), and western tanager (*Piranga ludoviciana*) occur throughout the forest canopy. Hairy woodpecker (*Picoides villosus*), northern flicker (*Colaptes auratus*), mountain chickadee (*Poecile gambeli*), and red-breasted nuthatch (*Sitta canadensis*) nest in cavities in trees and snags. Red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), and coyote (*Canis latrans*) are species that typically prey on small mammals and birds in conifer forests. Black bears (*Ursus americanus*) also occur in conifer forest in the plan area. Large snags associated with conifer forest along the river channel provide important wildlife habitat. Snags provide nesting, perching, hunting, and feeding locations for predatory bird species and other wildlife, and roost sites for bats.

Portions of the Truckee River corridor close to Truckee support Great Basin sage scrub habitat. This vegetation community is dominated by shrubby vegetation such as sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), and rabbitbrush (*Chrysothamus* sp.), with occasional Jeffrey pine trees interspersed throughout.

## SPECIAL-STATUS PLANT AND ANIMAL SPECIES

Special-status species are defined as plant and animal taxa that are legally protected or are otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations. Special-status species addressed in this section include:

- species listed or proposed for listing as threatened, endangered, or rare under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA);
- species considered as candidates for listing as threatened or endangered under ESA or CESA;
- species designated as sensitive by the U.S. Forest Service (USFS) Regional Forester;
- species designated as special interest species by the Tahoe Regional Planning Agency (TRPA);
- wildlife species identified by the DFG as California species of special concern and by the U.S. Fish and Wildlife Service (USFWS) as federal species of concern;
- animals fully protected under the California Fish and Game Code;
- species that meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;
- species designated as a special-status, sensitive, or declining species by other state or federal agencies or nongovernmental organizations; and
- plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (Lists 1B and 2).

Special-status plant species with potential to occur in the Truckee River corridor are presented in Table 2-1 . Montane wet meadow habitat within the corridor could potentially support Bolander's bruchia (*Bruchia bolanderi*), English sundew (*Drosera anglica*), Oregon fireweed (*Epilobium oreganum*), Plumas ivesia (*Ivesia sericoleuca*), Stebbin's phacelia (*Phacelia stebbinsii*), and Robbin's pondweed (*Potamogeton robbinsii*). American manna

TABLE 2-1 Special-Status Plant Species with Potential to Occur within Truckee River Corridor

| Species | Listing Status | | | Habitat | Distribution |
|---|---|---|---|---|---|
| | Fed | State | CNPS | | |
| Bolander's bruchia *Bruchia bolanderi* | -- | -- | 2 | Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest; damp soil | Fresno, Mariposa, Nevada, Plumas, Tehama, Tulare, and Tuolumne Counties; Oregon |
| English sundew *Drosera anglica* | -- | -- | 2 | Bogs and fens, meadows and seeps; mesic sites | Lassen, Nevada, Plumas, Shasta, Sierra, and Siskiyou Counties; Idaho, Oregon, and Washington |
| Oregon fireweed *Epilobium oreganum* | -- | -- | 1B | Bogs and fens, lower montane coniferous forest, upper montane coniferous forest; mesic sites | Del Norte, El Dorado, Glenn, Humboldt, Mendocino, Nevada, Shasta, Tehama, and Trinity Counties; Oregon |
| Starved daisy *Erigeron miser* | -- | -- | 1B | Upper montane coniferous forest; rocky substrates | Nevada and Placer Counties |
| Nevada daisy *Erigeron nevadincola* | -- | -- | 2 | Great Basin scrub, lower montane coniferous forest, pinyon and juniper woodland; rocky substrates | Lassen, Placer, Plumas, and Sierra Counties; Nevada |
| Donner Pass buckwheat *Eriogonum umbellatum var. torreyanum* | FSC | -- | 1B | Meadows and seeps, upper montane coniferous forest; volcanic and rocky substrates | Nevada, Placer, and Sierra Counties |
| American manna grass *Glyceria grandis* | -- | -- | 2 | Bogs and fens, meadows and seeps, marshes and swamps; streambanks and lake margins | Humboldt, Mendocino, Mono, and Placer Counties |
| Plumas ivesia *Ivesia sericoleuca* | FSC | -- | 1B | Great basin scrub, lower montane coniferous forest, meadows and seeps, vernal pools; vernally mesic sites on usually volcanic substrates | Lassen, Nevada, Placer, Plumas, and Sierra Counties |
| Stebbin's phacelia *Phacelia stebbinsii* | -- | -- | 1B | Cismontane woodland, lower montane coniferous forest, meadows and seeps | El Dorado, Nevada, and Placer Counties |
| Robbin's pondweed *Potamogeton robbinsii* | -- | -- | 2 | Cismontane woodland, lower montane coniferous forest, meadows and seeps | Alpine, Inyo, Lassen, Madera, Nevada, Sierra, Siskiyou, and Tuolumne Counties; Idaho, Oregon, Utah, and Washington |
| Marsh scullcap *Scutellaria galericulata* | -- | -- | 2 | Lower montane coniferous forest, meadow and seeps; mesic sites; marshes and swamps | El Dorado, Lassen, Modoc, Nevada, Placer, Plumas, Shasta, San Joaquin, and Siskiyou Counties; Oregon |
| Munroe's desert mallow *Sphaeralcea munroana* | -- | -- | 2 | Great basin scrub | Placer County; Idaho, Nevada, Oregon, Utah, Washington, and Wyoming |

**U.S. Fish and Wildlife Service (USFWS) Federal Listing Categories:**

**FC** Federal Candidate

**FSC** Federal Species of Concern

**California Department of Fish and Game (DFG) State Listing Categories:**

**CE** California Endangered

**California Native Plant Society (CNPS) Listing Categories:**

**1B** Plants rare, threatened, or endangered in California and elsewhere

**2** Plants rare, threatened, or endangered in California, but more common elsewhere

## TABLE 2-2 Special-Status Wildlife Species with Potential to Occur in the Plan Area

| Species | Regulatory Status1 | | | | Habitat | Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| | USFWS | DFG | USFS | TRPA | | |
| **BIRDS** | | | | | | |
| Bald eagle *Haliaeetus leucocephalus* | FT (FPD) | FP | | | In western North America, nests and roosts in coniferous forests within 1 mile of lake, reservoir, stream, or ocean | High; Known to occur (non-nesting); Truckee River provides suitable foraging habitat, and adjacent trees provide suitable roosting and perching habitat; also known to regularly occur nearby along Lake Tahoe shoreline |
| Osprey *Pandion haliaeetus* | | CSC | | SI | Nests in snags or cliffs or other high, protected sites near ocean, large lakes, or rivers with abundant fish populations | High; Truckee River provides suitable foraging habitat, and adjacent trees provide suitable roosting and perching habitat; known to occur nearby along Lake Tahoe shoreline |
| Waterfowl species | | | | SI | Wetlands such as lakes, creeks, drainages, marshes and wet meadows | High; Known to occur in plan area in and along Truckee River |
| California spotted owl *Strix occidentalis occidentalis* | | CSC | S2 | | Mature forests with suitable nesting trees and snags | Moderate; limited foraging habitat present in conifer forest in plan area; known to occur and nest near plan area |
| Northern goshawk *Accipiter gentilis* | | CSC | S | SI | Nests and roosts in older stands of red fir, Jeffrey pine, and lodgepole pine forests; hunts in forests, forest clearings, and meadows | Moderate; limited foraging habitat present in conifer forest in plan area; known to occur and nest near plan area |
| Cooper's hawk *Accipiter cooperii* | | CSC | | | Nests in a wide variety of habitat types, from riparian woodlands and gray pine-oak woodlands through mixed conifer forests | Moderate; known to nest near plan area; suitable habitat present in plan area |
| Sharp-shinned Hawk *Accipiter striatus* | | CSC | | | Nests in coniferous or mixed forests, usually selecting a conifer for the nest tree. Forages in a wide variety of coniferous, mixed, or deciduous woodlands. | Moderate; known to nest in region and occur near plan area; suitable habitat present in plan area |
| Yellow warbler *Dendroica petechia* | | CSC | | | Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral; may also use oaks, conifers, and urban areas near streamcourses | Moderate; suitable habitat present in plan area; reported to occur near plan area |
| Willow flycatcher *Empidonax traillii adastus* | | CE | S | | Riparian areas and large wet meadows with abundant willows for breeding; usually found in riparian habitats during migration | Moderate (migration); suitable migratory habitat present in plan area; reported to occur near but not known to breed in plan area; a small patch of habitat with riparian vegetation and hydrology potentially suitable for breeding occurs in the upper reach of the plan area. |
| American peregrine falcon *Falco peregrinus anatum* | | FP | S | SI | Cliffs or rocky outcrops for nesting. Forages over a variety of habitats but mostly prefers aquatic associated areas where abundant aerial prey is present | Low; species not known to occur near Plan area; suitable nesting habitat occurs near but not within plan area; limited foraging habitat present in plan area |
| Golden eagle *Aquila chrysaetos* | | CSC | | SI | Rolling foothills and mountain areas. Nests on cliffs and in large trees. | Low; species not known to occur near Plan area; suitable nesting habitat occurs near but not within plan area; limited foraging habitat present in plan area |
| **AMPHIBIANS** | | | | | | |
| Mountain yellow-legged frog *Rana muscosa* | FC | CSC | S | | Associated with streams, lakes, and ponds in montane riparian, lodgepole pine, subalpine conifer, and wet meadow habitats | Low; aquatic habitat is considered low-quality due to presence of nonnative fish populations; no known extant populations near plan area |
| **MAMMALS** | | | | | | |
| Mule deer *Odocoileus hemionus* | | | | SI | Riparian areas, meadows, and early- to mid-successional stages of most vegetation types | High; suitable habitat present in plan area; plan area is within summer range of the Truckee-Loyalton herd |
| American marten *Martes americana* | | | S | | Dense canopy mixed evergreen forests with many large snags and downed logs, small openings with good ground cover for foraging, riparian corridors | Moderate; suitable habitat present in plan area; detected south of plan area at Page Meadows |
| Sierra Nevada mountain beaver *Aplodontia rufa californica* | | CSC | | | Dense montane riparian-deciduous habitat, and brushy stages of forest habitats near abundant water; requires dense understory vegetation for food and cover, and soft soil for burrowing; burrows are typically near streams or springs | Moderate; reported to occur near plan area |
| Sierra Nevada snowshoe hare *Lepus americanus tahoensis* | | CSC | | | Conifer forest and dense thickets | Moderate; some suitable habitat present in plan area |

American Bald Eagles winter at Lake Tahoe — *© 2005 Jupiterimages Corporation*

**STATUS EXPLANATIONS**

**U.S. Fish and Wildlife Service (USFWS) Federal Listing Categories:**

- **FT** Federal Threatened
- **FC** Candidate for listing as threatened or endangered under ESA
- **FPD** Federally proposed for delisting

**California Department of Fish and Game (DFG) State Listing Categories:**

- **CE** California Endangered
- **CSC** California Species of Special Concern
- **FP** Fully Protected

**U.S. Forest Service (USFS):**

- **S** USFS Lake Tahoe Basin Management Unit sensitive species, Region 5 Forester's Species List, Fall 2001

**Tahoe Regional Planning Agency (TRPA):**

- **SI** TRPA special interest species, Regional Plan for the Lake Tahoe Basin: Code of Ordinances 1987
- **2** A petition to list California spotted owl as threatened or endangered under ESA was filed in April 2000. On February 10, 2003, after completing its 12-month review of the petition, USFWS determined that listing is not warranted and the species will not be proposed for listing at this time. On September 1, 2004, an updated petition to list California spotted owl was filed; USFWS has not completed its review of this petition and issued a determination.

grass (*Glyceria grandis*) and marsh skullcap (*Scutellaria galericulata*) have potential to occur in both wet meadow and freshwater marsh habitats. Starved daisy (*Erigeron miser*), Nevada daisy (*Erigeron nevadincola*), and Donner Pass buckwheat (*Eriogonum umbellatum* var. *torreyanum*) could occur in the coniferous forest habitats that are present in upland areas. Munroe's desert mallow (*Sphaeralcea munroana*) has potential to occur in Great Basin sagebrush scrub habitat.

All of the plant species discussed above are included on CNPS Lists 1B or 2 (plants that are rare, threatened, or endangered in California). Donner Pass buckwheat and Plumas ivesia are also listed as Federal Species of Concern.

An initial data review preliminarily identified 22 special-status wildlife species (including "waterfowl" collectively) that could occur in the plan area region. It was determined that the plan area is known to or could support 16 of those species. This determination was based primarily on (1) the extent and quality of habitat in the plan area and (2) the proximity of the plan area to known extant occurrences of the species and the regional distribution and abundance of the species. Species occurrence sources included the California Natural Diversity Database (2005), mapped occurrences provided by the U.S. Forest Service, and personal observations by an EDAW biologist. These 16 species, the likelihood of their occurrence, and regulatory status are summarized in Table 2-2. Several of the database and mapped occurrence records were either non-specific or did not reliably reflect habitat use or distribution patterns in the plan area, based on the species' life history and type of observation (e.g., incidental observations of highly mobile species at one point in time). Therefore, a species occurrence map that implies wildlife distributions in the plan area was not prepared for this report.

### INVASIVE PLANTS

The California Invasive Plant Council (Cal-IPC) maintains a list of species that have been designated as invasive in California. The term noxious weed is used by government agencies to apply to exotic plants that have been defined as pests by law or regulation (California Department of Food and Agriculture 2000).

Several plant species classified as invasive by Cal-IPC or as noxious weeds by CDFA have potential to occur in the plan area including cheatgrass (*Bromus tectorum*), white-top (*Cardaria pubescens*), bull thistle (*Cirsium vulgare*), Klamath weed (*Hypericum perforatum*), perennial pepperweed (*Lepidium latifolium*), water milfoil (*Myriophyllum aquaticum*), ox-eye daisy (*Leucanthemum vulgare*), and woolly mullein (*Verbascum thapsus*). Resource agencies including DFG and USFS have become increasingly concerned about the spread of invasive plant species and may require that measures be taken to reduce the potential spread of these species during ground-disturbing activities.

## FISH OF THE TRUCKEE RIVER

A total of seven native fish species occur or have the potential to occur in the Truckee River within the plan area (Table 2-3). The general abundance of the native fish community has declined considerably since the arrival of Euroamericans to the region. It is believed that several factors have contributed to the decline or extinction of native fish and the degradation of fish habitat in the Truckee River. Extensive logging, water diversions, intense grazing, commercial harvest, road building, and the introduction of nonnative fish are believed to have cumulatively contributed to the change in the fisheries composition and degradation of fish habitat (Sierra Nevada Ecosystem Project 1996, Murphy and Knopp 2000). Beginning in the late 1800s, many nonnative fish species were introduced into the Truckee River basin (Sigler and Sigler 1987, U.S. Fish and Wildlife Service 2003). The introduction of nonnative fish has greatly influenced the native fish community. Summarized species accounts are provided for all native and selected important nonnative fish species that occur or have the potential to occur in the watershed plan area.

### NATIVE FISH SPECIES

Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) is the only salmonid native to the Truckee River. Of all of the native fish species, Lahontan cutthroat trout were especially revered by Native Americans because they provided ample food for their people. In the late 1800s and early 1900s the Lahontan cutthroat trout supported a commercial fishery that supplied markets as far away as San Francisco. The fishery was in decline during the 1920s and finally collapsed in the early 1930s (Cordone and Frantz 1966). By 1939, the Lahontan cutthroat trout was extirpated from the Tahoe Basin. The failure of this fishery and its extirpation were the result of overharvesting, habitat degradation, and the introduction of nonnative fishes (Moyle 2002). Numerous attempts have been made to reintroduce this native trout into the Tahoe Basin. Between 1956 and 1964, Lahontan cutthroat trout from the Independence Lake strain reared in Heenan Lake in Alpine County, California, were planted annually in Taylor Creek and in headwater streams of the Upper Truckee River (Cordone and Frantz 1966). In 1970, the Lahontan cutthroat trout was federally listed as endangered, but in 1975 it was reclassified as threatened (40 Federal Register [FR] 29864, July 17, 1975) to facilitate its management and allow angling (Benke 1992).

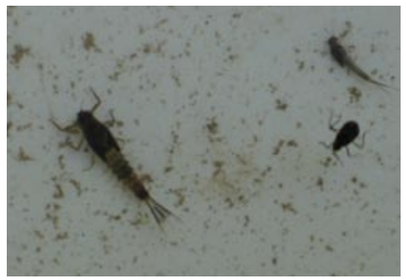
Mountain whitefish (*Prosopium williamsoni*) is native to lakes and streams of western North America, including the Truckee River. Adults are typically 10–16 inches in length and spawn in the fall or early winter. Lake-dwelling individuals may spawn in the shallow littoral zone in lakes or among gravel, cobble, and boulders in riffles of tributary streams. Mountain whitefish spend much of their time near the bottom of streams and feed mainly on aquatic insect larvae. These fish were an important food fish for Native

Lahontan Cutthroat Trout — *Photo Courtesy US Forest Service*

TABLE 2-3 Fish Species in the Truckee River

| Common Name | Species Name |
|---|---|
| Native Fish Species | |
| Lahontan cutthroat trout | *Oncorhynchus clarki henshawi* |
| Mountain whitefish | *Prosopium williamsoni* |
| Paiute sculpin | *Cottus beldingi* |
| Lahontan redside | *Richardsonius egregious* |
| Lahontan speckled dace | *Rhinichthyes osculus robustus* |
| Tahoe sucker | *Catostomus tahoensis* |
| Mountain sucker | *Catostomus platyrhynchus* |
| Important Nonnative Fish Species | |
| Rainbow trout | *Oncorhynchus mykiss* |
| German brown trout | *Salmo trutta* |

*Sources: Dill and Cordone 1997, Schlesinger and Romsos 2000, Moyle 2002*


Water Nymph


Rainbow Trout — *Photo Courtesy US Forest Service*

Americans (Moyle 2002). Their current distribution in the region is poorly documented and they are generally believed to be less abundant and less widely distributed relative to historic levels. The reasons for decline are unclear; however, construction of dams and predation on whitefish fry by nonnative trout species are believed to be possible causes (Moyle 2002).

Paiute sculpin (*Cottus beldingi*) is the only sculpin native to the Lahontan Basin, including the Truckee, Carson, Walker, Quinn, and Humboldt River watersheds. This species inhabits streams with slight to moderate current and is found in riffle areas among rubble or large gravel. It also occurs in lakes, including Lake Tahoe. The Paiute sculpin's food consists of a variety of aquatic invertebrates. This sculpin is an important prey item for some species of trout (Moyle 2002).

Lahontan redside (*Richardsonius egregious*) is native to streams and lakes in the Lahontan Basin, including the Truckee, Walker, and Carson River watersheds. Spawning occurs among gravel and cobble substrate in streams. In small streams, adults associate with high-velocity water along the stream margin or in backwater areas (Moyle 2002).

Speckled dace (*Rhinichthyes osculus*) is the most widely distributed fish in western North America. Lahontan speckled dace (*R. o. robustus*) occurs throughout streams and lakes in the Lahontan Basin and is the only subspecies native to the Truckee River. Speckled dace may spawn among gravel areas in stream riffles. Fry concentrate in warm shallows, particularly between large rocks or among emergent vegetation. Adults prefer large substrates with interstitial spaces, shallow rocky riffles and runs, and submerged vegetation or tree roots (Moyle 2002).

Tahoe sucker (*Catostomus tahoensis*) is native to lakes and streams in the Lahontan Basin, including the Truckee River. Suckers can spawn in Lake Tahoe or streams. In streams, spawning generally occurs in runs or areas of small gravel in pools. Juveniles prefer pools and deep runs with abundant cover (Moyle 2002).

Mountain sucker (*Catostomus platyrhynchus*) is native to lakes and streams in the Lahontan Basin, including the Truckee River. Spawning usually takes place between June and July on gravel riffles. Mountain suckers feed mostly on algae and diatoms as well as small quantities of aquatic insects and other invertebrates (Moyle 2002).

### NONNATIVE FISH SPECIES

Rainbow trout (*Oncorhynchus mykiss*) was first introduced into the Truckee River in the late 1800s. Until recently, large numbers of domestic hatchery-raised rainbow trout have been planted annually into the Truckee River between Tahoe City and Truckee. Rainbow trout have the potential to affect Lahontan cutthroat trout through competition, predation, and hybridization.

Brown trout (*Salmo trutta*) was introduced into eastern North America from Europe and from there into California in 1893 (Dill and Cordone 1997). It is likely that this fish was introduced into the Truckee River shortly after its first planting in other parts of California. Brown trout are fall spawners and have the potential to affect Lahontan cutthroat trout through predation and competition.

## AQUATIC MACROINVERTEBRATES

Aquatic macroinvertebrates are common and important inhabitants of the Truckee River. Insects are the main types typically present and commonly include mayflies (*Ephemeroptera*), stoneflies (*Plecoptera*), caddisflies (*Trichoptera*), and true flies (*Diptera*). Common noninsect invertebrates include snails, leeches, worms, and scuds (Herbst 2001). Most aquatic invertebrates can move over land or through the air during part of their life cycle, so they are not restricted by barriers to specific zones or reaches. Instead, they are found wherever the habitat is suitable, with feeding behavior playing an important role in habitat requirements. In general, one finds relative increased densities of stoneflies, mayflies, caddisflies, and blackflies in colder, swifter habitats, and more dragonflies, damselflies, beetles, bugs, midges, and mollusks in the warmer, lower-gradient habitats.

Aquatic macroinvertebrates are essential to the proper ecological function of all types of aquatic systems. Many aquatic macroinvertebrates exploit the physical characteristics of aquatic ecosystems to obtain their foods. As consumers at intermediate trophic levels, aquatic invertebrates are influenced by both bottom-up and top-down forces in streams and serve as the conduits by which these effects are propagated. Aquatic macroinvertebrates can have an important influence on nutrient cycles, primary productivity, decomposition, and translocation of materials. Aquatic macroinvertebrates constitute an important source of food for numerous fish, and unless outside energy subsidies are greater than instream food resources for fish, effective fisheries management must account for fish-macroinvertebrate linkages and macroinvertebrate linkages with resources and habitats.

Interactions among aquatic invertebrates and their food resources vary among functional groups. Five functional groups are frequently identified based on feeding behavior: scrapers, shredders, collectors, filterers, and predators.

- Scrapers are animals that graze or scrape materials (periphyton, or attached algae, and its associated microbiota) from mineral and organic substrates.
- Shredders are organisms that comminute primarily large pieces of decomposing vascular plant tissue (greater than 1 millimeter in diameter) along with the associated microflora and fauna, feed directly on living vascular macrophytes, or gouge decomposing wood.
- Collectors are animals that feed primarily on fine particulate organic matter (less than 1 millimeter in diameter) deposited in streams.
- Filterers are animals with specialized anatomical structures (e.g., setae, mouth brushes, fans) or silk and silk-like secretions that act as sieves to remove particulate matter from suspension.
- Predators are organisms that feed primarily on animal tissue either by engulfing their prey or by piercing prey and sucking body contents.

### AQUATIC ECOSYSTEM MONITORING AND BIOASSESSMENT

Aquatic invertebrates serve as valuable indicators of stream health. Each aquatic invertebrate species has a different level of tolerance of degradation. Some species have narrow and specific habitat requirements and are therefore restricted to certain habitat conditions, while others can survive in a wide variety of habitat conditions (Erman 1996). It is possible to use different invertebrate species and assemblages as indicators of water quality and habitat conditions (Herbst 2001).

Aquatic invertebrates have been shown to be sensitive and informative indicators of stream ecosystem health and water quality and have been used for many decades to monitor impacts on aquatic and terrestrial habitats (bioassessment). The principle behind bioassessment is to determine the biological integrity of an affected site by comparing its biotic community to that of a known unaffected or reference site. Aquatic invertebrates are becoming a critical component of bioassessment because they are more diverse, ubiquitous, and abundant than fish and because these organisms are in contact with both the water and bottom substrate in streams. Studies of aquatic invertebrates have contributed to an understanding and assessment of stream ecosystem health as related to land-use activities. Surveys of aquatic macroinvertebrates in the Truckee River and tributaries are ongoing as part of a bioassessment monitoring program used in the development of the sediment TMDL explained above (Herbst and Kane 2004). Data generated during these surveys are analyzed using biological metrics that are commonly used in bioassessment procedures. Biological metrics used in bioassessment procedures include taxa richness measures, species composition measures, tolerance/intolerance measures, and functional feeding groups.

## FACTORS AFFECTING ABUNDANCE AND DISTRIBUTION OF AQUATIC ORGANISMS

The characteristics of fish and aquatic invertebrate communities in aquatic ecosystems are determined by several factors. The size and composition of a community is governed by habitat type, quantity, and quality; historical events of geomorphic change and evolution; natural invasion; geographic isolation and breakdown; and human introductions and manipulations. The number and kinds of species can be attributed to several ecological mechanisms: dispersal, physiological tolerances, biological interactions among species, and environmental disturbances. Typically biological interactions (e.g., predation and competition) are important community-structuring agents in physically stable and complex aquatic systems, whereas the ability to disperse and colonize may be more important in aquatic environments subject to harsh recurrent disturbances (Schlosser 1987). Species distribution across varying habitat types is typically attributed to specific habitat requirements and morphological characteristics.

### HABITAT ALTERATIONS

Streamflow patterns in particular play a significant role in determining the characteristics of all other stream habitat factors. Streamflow patterns are important in driving geomorphic processes that in turn create, maintain, and/or change aquatic habitats. Pool, riffle, and run habitat types and substrate composition are directly influenced by fluvial geomorphic processes and associated streamflow patterns. Streamflow patterns also dictate the abundance and types of organisms present in a system. Both the flow needs for sustaining fisheries and other aquatic life, and the amount, timing, and variability of flow are important in relation to overall ecosystem function. Salmonids such as Lahontan cutthroat trout, rainbow trout, and brown trout require sufficient flows (and associated temperature) to queue spawning and to allow passage and provide spawning habitat. Eggs require sufficient flows during the incubation period to prevent egg exposure to desiccation, and to provide necessary water quality and temperature conditions. Rearing juveniles and resident adults both require flows necessary to maintain suitable water temperatures and dissolved-oxygen concentrations.

### STREAMFLOW PATTERNS

Native aquatic organisms and riparian plant species have been exposed to flow regimes that varied with seasonal and across-year weather fluctuations. In the Truckee River, this natural variation ranged across thousands of cfs on a relatively regular basis between heavy snowmelt events and drought cycles. Native biota such as fish, invertebrates, amphibians, and riparian plants have therefore presumably adapted to such variation in flow regimes. In fact, important processes responsible for sustaining native species may even depend on the river's natural variability in flows, such as the process of recruiting riparian vegetation (U.S. Fish and Wildlife Service 2003).

Streamflow patterns in the plan area are highly altered and are generally dictated by water releases to meet scheduled downstream demands. Finalization and implementation of the TROA should assist is improving managed streamflows for the benefit of aquatic and riparian organisms that inhabit the river.

### STREAM TEMPERATURE LIMITATIONS

Water quality in the Truckee River influences ecosystem processes. Temperature, dissolved oxygen, total dissolved solids, alkalinity, and nutrient supply are important parameters that affect aquatic biota and ecosystem function. Summer low flows and resulting warm-water temperatures in the Truckee River can become limiting for cold-water salmonid species such as Lahontan cutthroat trout, rainbow trout, and brown trout. Relatively high temperatures, often accompanied by low dissolved-oxygen concentrations, limit their ability to tolerate other stresses such as disturbances by rafters and swimmers. Additionally, loss of riparian vegetation (and associated cover and shade), and erosion and sediment inputs resulting from recreational activities and urbanization of the watershed have resulted in reduced habitat, increased scouring, and likely increased water temperatures.

### PHYSICAL HABITAT

Physical-habitat components may include habitat types (e.g., pools, riffles, and runs formed through geomorphic processes), instream cover (e.g., boulders and large woody debris [LWD]), and riparian elements (e.g., vegetation and instream tree and shrub debris). All of these habitat components provide structure and complexity that benefit the diversity and abundance of aquatic species. Shade decreases water temperatures, while low overhanging branches can provide sources of food by attracting terrestrial insects. As riparian areas mature, the vegetation sloughs off into the rivers, creating structurally complex habitat consisting of LWD that furnishes refugia from predators, creates water-velocity gradients, and provides habitat for aquatic invertebrates.

With the exception of the uppermost reach (i.e., Lake Tahoe Dam to River Run), the structure and complexity of physical habitat is generally good throughout the Truckee River. The uppermost section is generally lacking in all categories. The primary habitat types are gentle runs with infrequent breaks provided by slight riffles and deep extended pools. Very little instream-cover habitat exists in this section and riparian habitat is often degraded. Degraded riparian habitat appears to be caused by recreation-related access and trampling, road fill, and erosion and hydrologic disconnect resulting from failing culverts.

Brown Trout — *Photo Courtesy US Forest Service*

Goose Meadows, 2005

Public access to Truckee River has caused bank erosion and diminished riparian vegetation. This site is near the Tahoe City trailhead parking area on the south side of the river, 2005.

## NATIVE/NONNATIVE FISH SPECIES INTERACTIONS

Nonnative salmonid species including rainbow trout and brown trout have historically been maintained by release of hatchery-reared fish to provide additional recreational fishing opportunities in the Truckee River. Introductions of nonnative fish species into the Truckee River system, from both private and public entities, began in the 1870s (Leitritz 1970). The addition of nonnative salmonid species has contributed to the decline of most if not all cutthroat trout subspecies, including Lahontan cutthroat trout. In aquatic ecosystems modified by human disturbance, nonnative fish species often become dominant and outcompete native fish species (Deacon and Minckley 1974, Shepard et al. 1997, Brandenburg and Gido 1999, Schindler 2000, Knapp et al. 2001, Zanden et al. 2003). Nonnative salmonids have adverse effects on the distribution and abundance of native species in Sierra Nevada streams (Moyle and Vondracek 1985, Moyle and Williams 1990). The most prevalent nonnative salmonids in the Truckee River are rainbow and brown trout. Kokanee salmon (*Oncorhynchus nerka*) and lake trout (*Salvelinus namaycush*) are prevalent in Lake Tahoe, Donner Lake, and Fallen Leaf Lake. Brook trout, typically present in small tributaries, and brown trout compete with cutthroat trout for space and resources (Gerstung 1988, Gresswell 1988, Griffith 1988, Fausch 1989, Hildebrand 1998, Schroeter 1998, Dunham et al. 1999). Rainbow trout, a closely related species, spawns at the same time (i.e., spring) and uses the same spawning habitat as Lahontan cutthroat trout, with which it interbreeds, creating theoretically hybrid individuals.

## LIMITING FACTORS FOR AND RESTORATION OF LAHONTAN CUTTHROAT TROUT

Lahontan cutthroat trout was listed as an endangered species in 1970 (35 FR 16047, October 13, 1970). In 1975, under the Endangered Species Act of 1973 as amended (ESA), Lahontan cutthroat trout was reclassified as threatened to facilitate management and to allow for regulated angling (40 FR 29864 July 16, 1975). USFWS is responsible for restoration efforts for these species through the *Recovery and Restoration Implementation Plan for the Truckee River Basin.*

The 1970 *Federal Register* notice identified two primary listing factors that related directly to Lahontan cutthroat trout:

- present or threatened destruction, modification, or curtailment of habitat or range; and
- natural or human-caused factors affecting the species continued existence.

Three additional ESA listing factors that were considered in the reclassification of Lahontan cutthroat trout and not addressed as having a direct impact were:

- overutilization of the species for commercial, scientific, or education purposes;
- disease or predation; and
- inadequacy of existing regulations.

In 1995, USFWS released its recovery plan for Lahontan cutthroat trout, encompassing six river basins within the species' historic range, including the Truckee River basin. The *Lahontan Cutthroat Trout Recovery Plan* (U.S. Fish and Wildlife Service 1995) identified the need to develop ecosystem plans for the Truckee and Walker River Basins. The Recovery Plan (U.S. Fish and Wildlife Service 1995) specified five additional conditions contributing to decline and affecting the potential for recovery of Lahontan cutthroat trout in the Truckee River basin:

- reduction and alteration of streamflow and discharge,
- alteration of stream channels and morphology,
- degradation of water quality,
- reduction of Pyramid Lake elevation and concentration of chemical components, and
- introductions of nonnative fish species.

To address the complexity of issues related to recovery of Lahontan cutthroat trout, USFWS determined that basin-specific interagency and interdisciplinary teams, as well as public stakeholder participation, would be beneficial for developing Lahontan cutthroat trout recovery efforts. In 1998, USFWS organized a Management Oversight Group to address rangewide Lahontan cutthroat trout recovery. In 1998, the Truckee River Basin Recovery Implementation Team was organized to develop a strategy for Lahontan cutthroat trout restoration and recovery efforts in the Truckee River basin. Public stakeholder involvement began in 1998. As a result, the Truckee River Basin Recovery Implementation Team developed the *Short-Term Action Plan for Lahontan Cutthroat Trout in the Truckee River Basin* (U.S. Fish and Wildlife Service 2003) to provide primary guidance on recovery of the species in the Truckee River Basin..

Numerous efforts outlined in the short-term action plan are under way to restore Lahontan cutthroat trout populations in the Truckee River (U.S. Fish and Wildlife Service 2003), including stocking Lahontan cutthroat trout, performing a creel census, and conducting fish-population surveys.

With the endorsement of DFG, USFWS is conducting an experiment in reestablishing Lahontan cutthroat trout on the reach of the Truckee River between Lake Tahoe Dam and Donner Creek. As part of the endorsement, DFG withdrew future stocking allocations of nonnative rainbow and brown trout in this reach of the river. The reestablishment experiment included stocking approximately 30,000 Lahontan cutthroat trout throughout the reach during both 2002 and 2003 (U.S. Fish and Wildlife Service 2005).

To evaluate and monitor the fish stocking, USFWS performed a creel census and conducted ongoing population surveys using electrofishing gear between 2001 and 2004. A total of 10 species were sampled in 2004, including eight native and two nonnative species. The most abundant native species were the Paiute sculpin and mountain whitefish; the most abundant game species was the nonnative rainbow trout. A single, approximately 4-inch-long individual Lahontan cutthroat trout was sampled during the effort. 2005 activities included fish stocking, the creel census, and population monitoring, including additional efforts in different portions of the river and tributaries (U.S. Fish and Wildlife Service 2005).

### RECREATIONAL FISHERY VALUES

The Truckee River system is internationally renowned for its recreational trout fishery. During summer months the Tahoe City to Alpine Meadows section of the river is heavily stocked with nice-sized rainbow trout throughout the fishing season, which lasts from the fourth Saturday in April through November 15. During the summer, the section of the river from Lake Tahoe Dam to River Ranch is extremely crowded with river rafters, making daytime fishing difficult. However, the Truckee River below Lake Tahoe also has some of the best public access for large trophy brown and rainbow trout in California. Stream survey results show that the river is rich with insects and forage fish, which is a perfect combination that is highly conducive to growth of large brown and rainbow trout. Hatchery trout are stocked from Lake Tahoe downstream to Donner Creek.

## 2.3 SOCIOECONOMIC CONDITIONS

### LAND USE AND OWNERSHIP

Urban development within the Truckee River corridor is not extensive. Most development is limited to the urbanized area of Tahoe City, as well as light-industrial and commercial development along the river to River Ranch and again across the Placer-Nevada County line in Truckee. Private residential development, consisting of a mixture of seasonal and permanent residences, is patchy along the middle section of the corridor with the most developed residential tracts near Squaw Valley Road.

Most of the land within the corridor is managed by the USFS. Management of federal land is split between the Lake Tahoe Basin Management Unit and the Tahoe National Forest. Private parcels are concentrated along the river, although the Sierra Pacific Power company owns the bed and banks of the Truckee River. Many of the private subdivision holdings date back to the 1940's, when lands held by the Lake Tahoe Railway and Transportation Company were transferred to Sierra Pacific Power and subsequently subdivided and sold through the LANFAR agreement. Accurate property lines and easements will need to be researched and surveyed for any proposed project near private parcels.

Recreational fishing along the Truckee River, 2005

There are easements along the corridor for Sierra Pacific Power utilities and the Tahoe-Truckee Sanitation Agency force main sewer export line, which carries sewage from communities along the north shore of Lake Tahoe to a wastewater treatment plant on the east side of the Town of Truckee, operated by the Tahoe-Truckee Sanitation Agency.

USFS lands provide an important part of recreational land use in the corridor, which includes campgrounds, portions of ski areas (not in the plan area), river access, and hiking, mountain biking, and equestrian trails. Aside from federal land, dominant land uses include limited municipal and commercial with some light industrial, open space and developed parks, and recreation (e.g., ski resorts along the Truckee River tributaries of Squaw and Alpine Creeks). Logging has greatly declined from its historical role as a major employer in the area, and today tourism and recreation are the region's chief industry.

Summer rafting on the Truckee River near Tahoe City, 2005

## RECREATION AND PUBLIC ACCESS

The Truckee River corridor provides year-round recreation opportunities. Summer recreation occurs both in the river corridor and on the surrounding public lands. Winter recreation occurs primarily at the two nearby ski resorts and in the backcountry adjoining the corridor.

### SUMMER RECREATION

There are three USFS campgrounds in the Truckee River corridor: Silver Creek, Goose Meadow, and Granite Flat. The campgrounds are open May 15 to September 15 and offer a variety of amenities. All are located along the south bank of the Truckee River. Granite Flat Campground has 74 tent or recreational-vehicle sites, seven walk-in sites, picnic tables, fire rings, vault toilets, and pumped water. Goose Meadows Campground has 25 campsites, picnic tables, fire rings, vault toilets, and pumped water. Silver Creek has 19 tent or small trailer sites, no large recreational-vehicle spaces, seven walk-in tent sites, vault toilets, and pumped water.

Hiking, biking, and equestrian trails lace the mountainsides that surround the Truckee River corridor. Most accessible backcountry trails are found to the south of the corridor, across SR 89. Trails along the ridgetops to the east are generally accessed from Tahoe City and the Town of Truckee. Several trails cross the corridor, including the Western States Trail (part of a planned Cap-to-Cap Trail from Sacramento to Carson City). This trail is open for hiking and horseback riding. The Truckee River Trail is a paved, Class 1 bicycle and pedestrian trail from Tahoe City to Squaw Valley. Well-developed trailheads are located at either end with parking, restrooms, and water. There are several small trails along the river adjoining the campgrounds. These are primarily used for fishing and river access.

Commercial and private rafting is available in the upstream reach of the river. Rafters begin in Tahoe City and pull out at River Ranch, approximately 5 miles downstream. Commercial operators have been active on this stretch of the Truckee River for more than 30 years. This activity is very popular, and although Placer County regulations limit the two commercial operators up to 100 boats each per day, rafters who bring their own boats are not regulated. On the most popular weekends like the Fourth of July, there are problems with public intoxication and underage drinking. The Placer County Penal Code permits open containers, but outlaws public drunkenness. Commercial operators do not permit glass and kegs on the river, but this is not enforceable once rafters leave the raft rental docks (Tahoe World 2004). The operators provide portable toilets and trash bins during the summer; they also pick up trash in and along the river, and have posted signs indicating where rafters should not pull out. Nonetheless, littering and trespassing are problems generally associated with rafters along the Tahoe City to River Ranch stretch of the Truckee River. Rafting and kayaking also occur on segments of the river downstream of River Ranch, but on a much more limited basis.

Fishing is very popular along the entire river corridor. Twenty-eight fishing spots are called out on the locally available Stream Time Fishing Access Map. Most of these spots are difficult to find and use wide shoulders and other pull-outs for river access. There are no signs and mile markers are inconsistent. Some of these fishing areas closely skirt private land. Because properties are not fenced, it may be difficult for many to know when they are trespassing.

### WINTER RECREATION

Winter recreation within the plan area is generally limited to USFS-managed land west of SR 89. Two ski areas, Squaw Valley and Alpine Meadows, are accessed through the plan area. Northstar-at-Tahoe is adjacent to the plan area to the east and accessed from SR 237.

Two major winter backcounty trailheads lie within the corridor: Pole Creek and Cabin Creek trailheads. The Pole Creek trailhead is on SR 89, 2.3 miles north of Squaw Valley and 6.2 miles south of Interstate 80, one-quarter mile south of the "Elevation 6000" sign, on the west side of the road. Parking is free and the California Department of Transportation (Caltrans) plows the extra-wide paved shoulder. The Pole Creek trailhead provides access for skiers and snowshoers. The Sierra Club's Bradley Hut is located 4 miles west of this trailhead in the upper Pole Creek drainage.

The Cabin Creek trailhead is accessed via a separate road 1 mile off SR 89. It provides access for cross-country skiers, snowshoers, and snowmobiles. Like Pole Creek, this is a backcountry area and there are no groomed trails or other services.

The east side of the river is generally not accessible to the public for winter recreation. The Tahoe Nordic Search and Rescue Team sponsors an annual cross-country ski race, "The Great Race," in March. The route for the race begins in Truckee and climbs up and over the ridgeline to Lake Tahoe. It does not access the Truckee River canyon. It is plausible that casual winter recreation would occur on the east side of the river on public lands if there were easy public access across the river. Currently all bridges are privately owned and generally gated.

## 2.4 CULTURAL AND HISTORIC RESOURCES

The cultural resources documented within the plan area are the result of human behaviors within, and adaptations to, the natural environment. To better understand how these sites, features, and artifacts relate to the social and economic foundations of the present day, a cultural context must be established. The following section briefly discusses and summarizes cultural developments through the prehistoric, ethnographic, and historic past. More detailed information is provided for several elements of local history—transportation, logging, and Basque sheep herding—because of the prominent role these developments played in the local economy and the evidence of these practices within and in the vicinity of the Truckee River area.

### PREHISTORY

Archaeological research in the Sierra Nevada since the 1950s has resulted in the accumulation of a substantial body of knowledge regarding early Native American habitation in the Sierra Nevada. Investigations begun in the 1950s focused on the examination of prehistoric sites throughout the Lake Tahoe vicinity, including the lake shoreline, and the high Sierran crest east of the lake (see Heizer and Elsasser 1953, Arnold 1957, Elsasser 1960). This research led to the designation of two chronologically and spatially distinct archaeological manifestations. The Martis Complex, archaeologically defined by the characteristic heavy use of basalt for tools, was believed to date to the period from 2,000 to 4,000 years ago. The subsequent Kings Beach Complex was associated with bow-and-arrow technology, as well as a greater use of obsidian and silicate materials. Technological developments oriented toward the extensive use of local fisheries and piñon nuts were also apparent (Heizer and Elsasser 1953).

Work in the region since the 1970s has led to important modifications to the earlier sequence of archaeological developments. Excavations and analyses presented in Elston and Davis (1972), Elston et al. (1977), and Keesling and Johnson (1978) revealed the presence of several pre-Martis manifestations termed the Tahoe Reach and Spooner phases, and the division of the Martis and Kings Beach complexes into five more refined phases (see Elston et al. 1977). The overview of California archaeology by Moratto (1984) provides a thorough summary of the above studies relevant to the Sierra Nevada and the Lake Tahoe region.

### ETHNOHISTORY

The Truckee River falls within territory commonly attributed to the ethnographic Washoe (Kroeber 1925). The Washoe occupied the area surrounding the upper reaches of the Truckee and Carson Rivers, with Lake Tahoe constituting the center of their traditional territory (Kroeber 1925). The Washoe were the westernmost of the Great Basin hunting and gathering societies, although their use of Lake Tahoe and the high Sierra led to a number of important distinctions in their way of life. Linguistic evidence suggests that "…the Washoe people have had a long tenure in their known area of historic occupation and that their presence predates the arrival of the Numic-speaking neighbors" (Kroeber 1925, D'Azevedo 1986).

Euroamerican influence on the Washoe may have begun indirectly by the early 1800s, when Spanish missionaries exploring California's Central Valley established relationships with groups that likely had some contact with the Washoe. Also, early trappers and explorers traversing the Lake Tahoe region undoubtedly had an impact on the native populations. After the discovery of gold in the foothills in 1848, the natural and cultural environment of the Sierra Nevada was irrevocably changed. As would-be miners and settlers streamed into California along the trails and passes through the mountains, the Washoe were quickly displaced and their lifeways significantly altered. The Washoe lived relatively peacefully alongside Euroamerican immigrants who settled in their territory, but "were often blamed for depredations instigated by both Northern Paiute and White brigands" (D'Azevedo 1986).

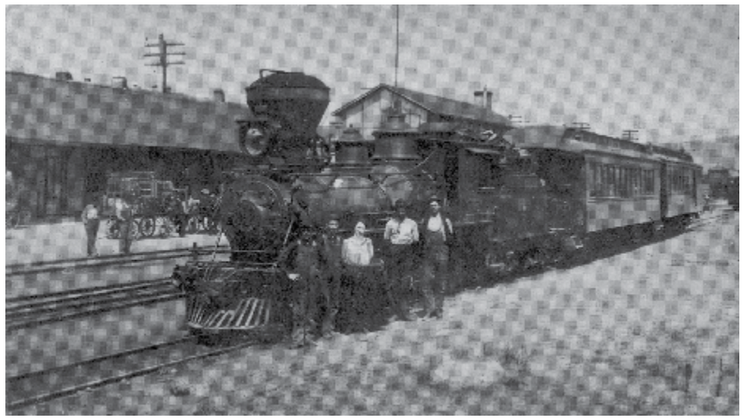
Gradually, the Washoe saw their traditional territory claimed by European and American settlers. Political appeals and requests for government protections went largely unanswered, and by the early 20th century the Washoe were heavily marginalized. Most people lived "...a precarious existence in scattered camps on the outskirts of towns or in more isolated sections" (D'Azevedo 1986). Today, the federally recognized Washoe Tribe of Nevada and California is reinvesting in its community and constitutes an active, independent, and thriving culture. The Washoe are ensuring their future as a distinct people through a renewed pursuit of traditional practices and beliefs, and participation in educational, economic, and political activities.

Dat-So-Lat-Lee with examples of her basketry — *Photo Courtesy The Saga of Lake Tahoe, E.B. Scott*

Typical Washoe summer lodge — *Photo Courtesy Lake Tahoe Historical Society*

## HISTORY

Historic-era developments in the Truckee River area have been dominated by three major endeavors since the middle of the 19th century: transportation, timber harvesting, and ranching and sheep herding. Specifically, the establishment of trails, roadways, and railroads had the most significant impact on the landscape, providing easy access to the region and providing for the rise of industry and towns. Although some mining occurred in the area during the 1800s, local operations were short-lived and had little lasting impact on the social, cultural, and economic foundations of the region. The timber industry, on the other hand, was the real financial and industrial power in the Lake Tahoe and Truckee River basins and greatly influenced economic developments throughout much of the 20th century. Finally, ranching, and most notably sheep herding carried out by people of Basque descent, also played a major role in forming the overall cultural character of the region.



Lake Tahoe Railway and Transportation Company brought passengers from Truckee to Tahoe City along the Truckee River corridor from 1899 to 1943 — *Special Collections Department, University of Nevada, Reno Library*


Town of Truckee, winter 1936-1940 — *Special Collections Department, University of Nevada, Reno Library*

### EARLY TRANSPORTATION

Emigrant trails such as the California Trail or the Truckee Pass Emigrant Road (see Hoover et al. 1990) and the more established roadways that eventually followed them were important elements in the historical development of transportation infrastructure along the Truckee River. However, it was rail travel that proved to be the most influential in shaping the physical and cultural landscape of the Truckee and its surroundings. Although not the first rail line established in the Tahoe region, the Lake Tahoe Railway and Transportation (LTR&T) Company line from the Southern Pacific junction in Truckee to the north shore of Lake Tahoe commenced operations in 1899. The company had only been incorporated a year before, but the establishment of the rail service was expedited by an 1879 survey and the reuse of lake vessels, wharves, and a machine shop formerly belonging to the Truckee Lumber Company.

Unlike previously established railroads in the region, the LTR&T was built solely as a passenger and tourist line, although some freight (usually timber and milled lumber) was carried as well. At Lake Tahoe, the narrow-gauge LTR&T line extended onto a long wharf where passengers could board the steamer *Tahoe* for trips to the various resorts that lined the Lake Tahoe shoreline. During the ensuing years, various spurs and branch lines were constructed to service Tahoe City and the Truckee Lumber Company, which began cutting timber in the area in 1903 and then in Squaw Valley in 1909.

Passenger business on the LTR&T was brisk, and by 1915 four round trips per day were scheduled between Truckee and Lake Tahoe. However, with the advent of improved motor highways in the region, rail passenger travel soon began to diminish. In 1925 the Southern Pacific leased the LTR&T lines and quickly widened them to accommodate standard-gauge trains. Despite an aggressive marketing campaign and the construction of new facilities and support lines, passenger traffic continued to decrease and the entire line was abandoned in November 1943 (Myrick 1992). The original LTR&T line itself was dismantled for scrap during World War II, but the grade remains today, serving as a hiking and bicycle path along the Truckee River

### LOGGING

Large-scale logging was first initiated in the Tahoe area after the discovery of silver at the Comstock Lode in 1859. When production began to decline in the mines in 1867, the local lumbering business also began to suffer. However, a new market for lumber was found in association with the construction of the Transcontinental Railroad. As the rails reached Donner Summit in 1866–1867, a number of mills established operations in the Tahoe area to supply the railroad with cordwood for fuel, lumber for construction, and ties for rail beds.

By the turn of the 19th century, timber tracts in the Tahoe area were largely stripped of pine, but fir and other species remained; fir had been largely ignored during the earlier harvesting, as it was considered unsuitable for the production of ties and timbers. With the introduction of paper mills, stands were reentered to harvest fir for use as pulpwood for the production of paper. The greater "digestibility" of fir species (over pine) now made them the targets of harvest. Also, growing communities in the region created a demand that was supported by localized sawmills and shingle mills, sawing pine and cedar, respectively. In many cases, once-temporary camps centered around timber stands or mills became more established and grew into many of the towns existing in the Tahoe and Truckee River basins today.

### BASQUE SHEEP HERDING

A history of Basque culture has been summarized by Douglass and Bilbao (1975), Mallea-Olaetxe (1992, 2000), and Rucks (n.d.). The following overview draws from the work of these authors.

The Basque country or *Euskal Herria*, "the land of the speakers of Basque," is a region in the Pyrenees Mountains on the Spanish-French border. Although some people of Basque descent arrived in what would become Mexico, New Mexico, and California as early as 1598, the first large group of Basque immigrants arrived in America in 1848–1849, lured by the hopes of striking it rich in the California gold fields. Like many other would-be miners, the Basques soon became disillusioned with mining and returned to more traditional pursuits. The historic Basque influence can still be seen in the Sierra Nevada today, and one of the most tangible reminders of their presence can be found in the prolific intricate tree carvings found in aspen groves found in the Truckee River basin and throughout the region.

### CULTURAL RESOURCES DOCUMENTED WITHIN THE PLAN AREA

The plan area is situated entirely within two U.S. Geological Survey topographic maps: the Truckee and Tahoe City quadrangles. According to records on file at the Northwest Information Center at California State University, Sacramento, a total of 55 cultural resource inventories and evaluations and other studies have been conducted within the study area that have resulted in the identification and documentation of 75 prehistoric and historic-era sites, features, and artifacts. A list of the cultural resource studies conducted in the plan area is provided in Appendix A.

Major study categories include cultural-resource investigations conducted in response to proposed timber harvests, electrical transmission lines, gas and water pipelines, roadway and bridge construction and maintenance, landfills, and residential and commercial development. No single study or group of studies stands out in terms of the number and significance of resources recorded within and in the vicinity of the plan area, and each investigation has contributed to the body of knowledge regarding prehistoric and historic-era resources present in the area. Most of these documented resources occur in discreetly defined areas, although one—the remains of the LTR&T, the former rail grade in particular—can be found throughout the entire expanse of the plan area.

## 2.5 RELEVANT PLANS AND POLICIES

Several existing public plans, agreements, and policies are relevant to implementation of the *Truckee River Corridor Access Plan*. They are summarized below.

**Truckee River Operating Agreement:** The TROA is the primary source of regulation for Truckee River flows along the entire Truckee River including the Truckee River corridor plan area. Parties involved in preparation of this agreement are the States of California and Nevada, Pyramid Lake Paiute Tribe, Sierra Pacific Power Company, Truckee Meadows Water Authority and others. The TROA will do all of the following (California Department of Water Resources 2005):

- allocate the waters of the Truckee River, Carson River, and Lake Tahoe basins between California and Nevada;
- enhance conditions for threatened and endangered fishes throughout the Truckee River basin;
- increase drought protection for Truckee Meadows (Reno-Sparks metropolitan area);
- improve river water quality downstream of Sparks, Nevada; and
- enhance instream flows and recreational opportunities in California and Nevada.

A draft of the TROA was released in October 2003.

**Lahontan Cutthroat Trout Recovery Plan**:: In 1995, USFWS released its recovery plan for Lahontan cutthroat trout, encompassing six river basins within the species' historical range, including the Truckee River corridor plan area. The Lahontan cutthroat trout Recovery Plan identified the need to develop ecosystem plans for the Truckee and Walker River Basins. In 1998, the Truckee River Basin Recovery Implementation Team was organized to develop a strategy for Lahontan cutthroat trout restoration and recovery efforts in the Truckee River basin. Public stakeholder involvement began in 1998.

**Short-Term Action Plan for Lahontan Cutthroat Trout in the Truckee River Basin:** This plan identifies tasks that are intended to eliminate or minimize threats that adversely affected Lahontan cutthroat trout and, through continued implementation of this process, ensure the long-term persistence of the species in the Truckee River basin, including the Truckee River corridor. Several of the tasks have been implemented to date including the stocking and monitoring of Lahontan cutthroat trout in the Truckee River in the plan area. This plan was developed by the Truckee River Basin Recovery Implementation Team for USFWS in August 2003.

**Water Quality Control Plan for the Lahontan Region:** This Basin Plan provides a set of goals and policies and is the basis for the Lahontan RWQCB's regulatory program. It sets forth water quality standards for the surface and ground waters of the region, which include both designated beneficial uses of water (including the Truckee River corridor) and the narrative and numerical objectives that must be maintained or attained to protect those uses. It identifies general types of water quality problems that can threaten beneficial uses in the region. It then identifies required or recommended control measures for these problems. This water quality control plan was developed by the Lahontan RWQCB in October 1994. The Basin Plan is being updated as part of the Pathway 2007 process for the Tahoe Basin.

**Placer County General Plan:** The general plan regulates land use in the plan area. The Truckee River corridor is designated as timberland and low-density residential in the general plan. This plan was prepared by Placer County and was last updated in August 1994.

***Town of Truckee Bicycle Master Plan***: This master plan provides direction for implementation of goals and policies in the Placer County General Plan. The planning area includes all lands within the Town of Truckee, and focuses on bike and trail connections to local and regional public lands and trails and bikeway systems. This master plan was prepared by the Town of Truckee Community Development Department with assistance from the National Park Service; Alta Planning; Western Botanical Services; Wildlife Resource Consultants; Susan Lindstrom; Leigh, Scott & Cleary Consulting; and Ward-Young Architects. This master plan was adopted in April 2002.

Flumes were used to move raw timber from logging stations to mills — *Photo Courtesy The Saga of Lake Tahoe, E.B. Scott*

***TRPA Regional Plan***: This regional plan includes Goals and Policies, a Water Quality Management Plan, Plan Area Statements and a Scenic Quality Improvements Plan. The TRPA Regional Plan is designed to bring the region into conformance with the threshold standards established for water quality, air quality, soil conservation, wildlife habitat, fish habitat, vegetation, noise, recreation, and scenic resources. The Truckee River corridor plan area falls within this regional-plan area. This plan was originally written by TRPA in 1987 and is continually updated (Tahoe Regional Planning Agency 2005). It is currently undergoing a comprehensive update as part of the Pathway 2007 process.

**U.S. Forest Service LTBMU Forest Plan:** This plan provides guidance for management of forested areas within the plan area. This plan was prepared by USFS and is currently being revised through the Pathway 2007 process. The Pathway 2007 process is a collaborative effort by the Tahoe public agencies to create a comprehensive plan for the Tahoe area through the next 20 years.

***U.S. Forest Service Tahoe National Forest Plan***: This plan provides guidance for the management of the Tahoe National Forest and was formulated to address public issues and management concerns related to the Tahoe National Forest. This plan was written by USFS and was last updated in 1990.

***North Lake Tahoe Resorts Association Master Plan***: This master plan defines a long-term vision and provides an investment plan for the community and tourism industry in the Tahoe area, including the Truckee River corridor plan area. This plan finds that the limited transit services, poor signage, and sporadic pedestrian and bicycle facilities in the area "substantially degrade" the visitor experience to North Lake Tahoe. This plan was prepared by the North Lake Tahoe Resorts Association and was first completed and approved in 1995. It was most recently updated in September 2004 (Design Workshop, Inc. 2004).

***Truckee River Watershed Baseline Assessment***: This assessment was prepared by Peregrine Environmental for the Truckee River Watershed Council in March 2002. The assessment identifies and evaluates existing sociopolitical, physical, biological, and other data on the Truckee River watershed, including the Truckee River corridor. The next step for the watershed council is to use the data from the baseline assessment to evaluate subwatersheds within the middle Truckee River and begin identifying opportunities for action.

***California Best Management Practices handbooks***: The California Stormwater Best Management Practices handbooks provide guidance on best management practices (BMPs) for stormwater management and erosion control for commercial, industrial, residential, and municipal development. They were published by the Stormwater Quality Task Force (SWQTF) in 1993. The SWQTF became the California Stormwater Quality Association (CASQA) in 2002, and in 2003 CASQA published an updated and expanded set of four BMP handbooks. These handbooks reflect the current practices, standards, and significant amount of knowledge gained since the early 1990s about the effectiveness of BMPs. Projects implemented along the Truckee River corridor should follow these basic standards.

***The Construction Site Best Management Practices Manual and the Storm Water Pollution Prevention Plan and Water Pollution Control Program Preparation Manual***: These manuals incorporate the requirements of the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) Permit, Statewide Storm Water Permit and Waste Discharge Requirements for the State of California, Department of Transportation (Order No. 99-06-DWQ, NPDES No. CAS000003) and the NPDES General Permit, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity (Order No.99-08-DWQ, NPDES No. CAS000002). These permits will be required with virtually any construction activities along the Truckee River. The most recent manuals are available on the Caltrans website (http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm).

***TMDL studies for Squaw and Bear Creeks (Lahontan RWQCB)***: Squaw Creek and Bear Creek are both tributaries to the middle reach of the Truckee River and therefore influence the water quality in the Truckee River corridor plan area. Both of these creeks are listed on the Section 303(d) list of waters that do not meet applicable water quality standards. Because of this listing, a TMDL study is currently being prepared by the Lahontan RWQCB for Squaw Creek. The Squaw Creek TMDL focuses on controlling sources of sediment from land use categories identified as major contributors to excessive instream sediment loading. A draft of this TMDL was released in December 2005. Bear Creek is currently being considered for delisting from the Section 303(d) list of impaired waters and; if delisted, a TMDL study would not be needed for this creek. (Truckee River Watershed Council 2005.)

***Lake Tahoe Regional Bicycle and Pedestrian Master Plan***: This master plan expands the goals of TRPA's Bikeway 2000 project—a project to create a bikeway facility that circles Lake Tahoe—to make the Lake Tahoe Basin a more bicycle and pedestrian friendly area. The plan's plan area is the 501-square-mile Lake Tahoe Basin, encompassing land within the states of California and Nevada and the 200-square-mile Lake Tahoe. The plan lists specific proposed bikeway and pedestrian facilities and provides cost estimates for these improvements. The plan includes Tahoe City and several miles of SR 89 included in the Truckee River corridor plan area. Fehr & Peers Transportation Consultants prepared this Master Plan for TRPA in May 2003.

***Lake Tahoe Basin Regional Transportation Plan***: 2004–2027: This document updates the Transportation Element of TRPA's 1987 Regional Plan, the 2000 Tahoe Metropolitan Planning Organization Federal Transportation Plan, and California Regional Transportation Plan. The Lake Tahoe Basin Regional Transportation Plan: 2004–2027 (2004 RTP) combines these documents into a single, unified plan. The plan identifies improvements for the movement of goods and people to, from and throughout the Lake Tahoe Basin for the next 23 years. A specific objective of the 2004 RTP is to increase public mobility by improving public-transportation and nonmotorized-transportation facilities to create an intermodal transportation system, which is a topic also considered in this Plan. The Bicycle and Pedestrian Element of the 2004 RTP is based on the Tahoe Metropolitan Planning Organization's Bicycle and Pedestrian Master Plan outlined above. This plan was prepared in October 27, 2004, for TRPA, Tahoe Metropolitan Transportation Planning Organization, and Tahoe Regional Transportation Planning Agency.

***Placer County Transportation Planning Agency Short Range Transportation Plans (Draft)***: In 2004, Placer County Transportation Planning Agency (PCTPA) worked with the public and the six transit providers who serve the western part of the county to develop updated short-range transit plans. The transit operators include Placer County Transit, Auburn Transit, Lincoln Transit, Roseville Transit, and Consolidated Transportation Service Agency. These plans outline detailed changes to existing service as well as provide recommendations for additional service between 2005 and 2012. This draft plan was prepared in December 2004 by LSC Transportation Consultants, Inc., for PCTPA.

***Tahoe Area Regional Transit Systems Plan Study (Second Revised Draft Report)***: This document was developed in conjunction with PCTPA and briefly outlines existing transit service in western Placer County and provides specific service improvements that Tahoe Area Regional Transit (TART) will implement within the 7-year window of the plan. The plan identifies that well-maintained and high quality pedestrian and bikeway facilities are integral to a successful transit system, and recommends that TART be involved in design of bicycle and pedestrian facilities and review major developments along the transit routes. The second revised draft of this plan was released in March 2005 and was prepared by LSC Transportation Consultants, Inc., for PCTPA.

Nevada County Transportation Commission Proposed Gold Country Stage Service Modifications: This report provides staff recommendations for service modifications to the Gold Country Stage Service to ensure that the transit service level can be sustained over the long term. The report was prepared by Nevada County Transportation Commission staff, and responds to the June 2001 *Triennial Performance Audit of Western Nevada County Transit Operators*, which determined that "the current service levels for both the fixed route and demand response programs may be too high given existing funding levels." The report provides recommendations for route streamlining, zone-based fares, and pass price increases. This report was prepared in April 2003 by Nevada County and the Department of Transportation Services and Sanitation.

***Town of Truckee Transit***: The Town of Truckee contracts with Aztec Corporation to provide two public transit services: Dial-a-Ride and the Truckee Trolley. Truckee Transit runs between the Truckee-Tahoe Airport to downtown Truckee Monday through Saturday between the hours of 9 and 5. The Truckee Trolley runs between Squaw Valley and Incline Village during the summer months.

***Town of Truckee Trails and Bikeways Master Plan***: This master plan was prepared by the Town of Truckee Community Planning Department and finalized in April 2002. The master plan provides guidance on the development of trails and bikeways throughout the town with the primary goals of creating a bicycle- and pedestrian-friendly community, promoting alternative transportation, and providing recreation access. The plan is a component of the Town General Plan and specifically addresses providing linkages outside of town limits.

Undercut banks and existing vegetation along the Truckee River, 2005.

## 2.6 AGENCIES WITH JURISDICTIONAL RESPONSIBILITIES

### TAHOE REGIONAL PLANNING AGENCY AND FEDERAL AGENCIES

***Tahoe Regional Planning Agency*** — TRPA oversees land surrounding Lake Tahoe, which includes the Truckee River corridor plan area up to River Ranch. TRPA would need to approve a development permit for projects within its jurisdiction.

***U.S. Forest Service*** — USFS has jurisdiction over federal lands in the Truckee River corridor. The USFS Lake Tahoe Basin Management Unit manages federal lands from Tahoe City to approximately River Ranch. The USFS Tahoe National Forest manages federal lands from River Ranch north, continuing beyond the Town of Truckee. USFS approval would be needed for any projects located on federal property.

***U.S. Army Corps of Engineers*** — The Truckee River corridor falls within the Sacramento District of USACE. If a project requires fill of waters of the United States or adjacent wetlands, USACE would need to approve a permit under Section 404 of the CWA.

***U.S. Bureau of Reclamation*** — The entire Truckee River corridor is within the Mid-Pacific Region of Reclamation. Reclamation is responsible for operation of the dam at Lake Tahoe and the release of water into the Truckee River. Projects are not anticipated to involve changes to water releases, so Reclamation would not have approval authority, unless federal funds were used to implement the project.

### STATE AGENCIES

***Lahontan Regional Water Quality Control Board*** — The entire Truckee River corridor is within the jurisdictional boundaries of the Lahontan RWQCB, which is a regional board operating under the SWRCB. The Lahontan RWQCB may have permit authority under the federal CWA for projects with a potential discharge of pollutants or for water quality certification if a wetland fill permit from USACE is needed.

***California State Lands Commission*** — The California State Lands Commission is responsible for submerged lands held in trust for the state. The commission would need to approve a project if the project involves changes to the river.

***California Department of Fish and Game*** — DFG has jurisdiction by law over fish and wildlife of the state. DFG would need to approve a Streambed Alteration permit, under Section 1602 of the Fish and Game Code, if a project altered the river or its riparian corridor.

***California Department of Transportation*** — Caltrans has jurisdiction over SR 89. Caltrans would need to approve any project that involves or encroaches into the highway's right-of-way.

### LOCAL AGENCIES

***Placer County*** — The entire Truckee River corridor plan area falls within Placer County. The County would approve projects that involve County funding or that are located on nonstate or nonfederal property.

User created trail along the Truckee River, 2005